

Claims

1. (Currently Amended) A method for setting and retrieval of a well plug, wherein the well plug is first moved to ~~the required~~ a selected position in the well bore, ~~characterized in that the~~ method ~~comprises~~ comprising the following steps:

mounting a packer element and an anchoring device on a shaft, the packer element and the anchoring device each being movable relative to the shaft between retracted and expanded positions;

mounting a displacement member on the shaft and connecting the anchoring device to the displacement member;

mounting an operating member on the shaft and connecting the operating member to the packer element with a link connection device;

connecting a locking device between the operating member and the displacement member that has a released position wherein the displacement member will move axially in unison with the operating member when the operating member is moved in a first direction and a locked position wherein the operating member may continue moving in the first direction relative to the displacement member;

with the locking device in the released position, ~~pushing a~~ moving the operating member axially in the first direction, causing the displacement meansmember to move axially via a along with the operating meansmember relative to the shaft, thereby pushing a moving the anchoring device radially out from the well plugshaft to the expanded position such that anchoring in the well bore wall is achieved; then

locking the displacement ~~means~~member in a ~~the~~ locked position by ~~means of~~with a the locking device; and

~~pushing~~moving the operating ~~means~~member further axially in the first direction relative to the displacement member and the shaft, thereby ~~pushing~~ moving the packer element via the link connection ~~with a packer element~~ radially out from the well ~~plug~~shaft from the retracted to the expanded position such that the packer element forms a pressure tight seal against the well bore wall.

2. (Currently Amended) The method according to claim 1, further comprising retrieving the well plug by the following steps:

~~pushing~~moving the operating ~~means~~member axially in a second direction, such that the link connection moves the with packer element ~~is pushed~~ radially inwards to the retracted position, while the anchoring device is still maintained in the expanded position anchoring of the well plug against the well bore wall; then

~~pushing~~moving the operating ~~means~~member further axially in the second direction, such that causing the locking device to move to the is released position and the displacement member to begin moving axially in unison with the operating member, causing the anchoring device is pulled to move radially inwards to the retracted position; then

pulling the well plug out of the well bore.

3. (Cancelled)

4. (Currently Amended) In a retrievable well plug device, comprising a ~~through~~ shaft with a link ~~connections~~assembly mounted thereon, ~~and an operating member connected to one end of~~ the link assembly by a first connection device, a packer element mounted around the shaft and to

the link assembly by a second connection device, wherein the link connection assembly
comprises a number of first and second links, pivotally connected to each other, ~~where the first~~
~~and second links in their respective ends are pivotally fastened to fastening devices, such that at~~
~~setting of the well plug by pushing~~moving the link connection assembly and the packer element
towards each other, with the operating member causes the link connection assembly and the
packer element to expand radially relative to the shaft from a contracted to an expanded position;
~~such that a mechanical barrier for the packer element is formed, the improvement comprising:~~

at least one of the first links having a generally T-shaped cross sectional profile and
comprising an arm with ~~an~~one end intended for fastening to ~~fastened~~ one of the fastening devices
and ~~the other~~another end of the arm comprises ~~means for fastening~~ fastened ~~to the~~ one of the
second links of the link connection assembly;

wherein at least one of the first links further comprises at least one upper supporting
surface generally transverse to the arm, such that the upper supporting surface overlaps with
supporting surfaces of adjacent ones of the first links to form an approximately tight
mechanical barrier against the packer element in the expanded position.

5. (Currently Amended) The device according to claim 4, wherein the arm of said at least
one of the first links is disposed generally ~~under~~radially inward from the upper supporting
surface relative to the shaft.

6. (Currently Amended) The device according to claim 5, wherein the supporting surface of
said at least one of the first links further comprises ~~an~~ first lower ~~inner~~ supporting surface and an
outer supporting surface generally under one of the upper supporting surfaces and a second lower
supporting surface generally under another one of the supporting surfaces, such that at least parts
a portion of said one of the upper ~~outer~~ supporting surface of said one of the first links are

~~supported towards~~ overlaps and engages a portion of the lowerinner supporting surface of the
adjacent one of the first links in the contracted and in the expanded positions.

7. (Previously Withdrawn, Currently Amended) The device according to claim 4, wherein the arm of said at least one of the first links is disposed generally radially inward from ~~under~~ the supporting surface, ~~and the arm of the link is disposed generally under an intersecting~~ along a line midway between side edge of the supporting surface and the supporting surface.

8. (Previously Withdrawn, Currently Amended) The device according to claim 7, wherein the supporting surface of said at least one of the links further comprises an lowerinner supporting surface generally underon an opposite side of an ~~the upper outer~~ supporting surface and a ~~lower supporting surface generally under the supporting surface on the opposite side of the arm, such that at least parts of the upper supporting surface of the link are supported against the lower supporting surface of the adjacent link and so that at least parts~~ a portion ~~of the upperouter~~ supporting surface of said one of the first links is supported against a portion of the lowerinner supporting surface of ~~the~~ adjacent one of the first links in the contracted and the expanded positions.

9. (Currently Amended) The device according to claim 4, wherein the ~~upper~~ supporting ~~surface~~ surface ends in a preferably is curved end surface in the end opposite to the end.

10. (Currently Amended) The device according to claim 9, wherein the ~~curved end~~ supporting surface has a radius of curvature approximately equal to ~~the inner~~ an outer radius of the ~~well bore~~ packer element in the expanded position.

11. (Cancelled)

12. (Original) The device according to claim 4, further comprising a flexible enclosure disposed radially on the outside of the links assembly for the protection of the link ~~connections~~ assembly against dirt and debris.

13. (Cancelled)

14. (Cancelled)

15. (Currently Amended) The device according to claim 4, wherein said at least one of the first links is formed such that the width of the upper supporting surface increases as the distance from one of the ends of the arms increases.

16. (Currently Amended) In a retrievable well plug device, having a shaft, an anchoring device ~~with~~having a number of gripping devices mounted to the shaft, wherein the gripping devices upon setting of the well plug expand radially relative to the shaft, thereby providing an anchoring of the well plug to the well bore wall, the improvement comprising:

a securing device carried by the shaft;

a plurality of links, each of -which has one end are pivotally secured to ~~at the~~ the securing ring device and in ~~a second another~~ end pivotally secured to one of the gripping devices ~~by means of fastening means; and~~

wherein moving the securing device relative to the shaft and to the gripping devices is pushed against the securing device to achieve the radial expansion of ~~causes the anchoring~~ gripping devices to move radially outward relative to the shaft.

17. (Original) The device according to claim 16, wherein the securing device ~~is~~comprises ~~axially resiliently arranged relative to the well plug by means of~~ spaced apart securing rings separated from each other by ~~at least one spring device, thereby achieving a pretensioning of the~~

~~anchoring device and/or the packer element with two mechanical barriers~~ for exerting a spring force against the gripping devices while in an expanded position.

18. (Original) The device according to claim 16, wherein each of the gripping device~~links~~ has a longitudinal axis that in the~~a~~ contracted position intersects an axis of the shaft at~~is at~~ a positive angle~~a between a length axis of the well plug.~~

19. (Original) The device according to claim 16, wherein each of the links ~~preferably~~ comprise~~has~~ a supporting end surface for support against~~that abuts~~ a supporting end surface of one of the gripping devices while in a contracted position.

20. (Original) The device according to claim 16, wherein each of the links ~~preferably~~ comprise~~has~~ a supporting end surface for support against~~that abuts~~ a supporting end surface of one of the gripping devices while in an expanded position.